



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846



In reply refer to:
1-1-05-F-0105

MAY 27 2005

Mr. Thomas Cavanaugh
Chief, Sacramento Valley Office
U.S. Army Corps of Engineers
1325 J Street
Sacramento, California 95814-2922

Subject: Formal Endangered Species Consultation on the proposed Roseville Energy Park Project (Corps File Number 200300637), Placer County, California

Dear Mr. Cavanaugh:

This is in response to your March 29, 2005, letter and supporting documentation requesting section 7 consultation for the proposed Roseville Energy Park Project (proposed project) in Placer County, California. Your request was received by the U.S. Fish and Wildlife Service (Service) on March 31, 2005. At issue are potential adverse effects to the federally-listed vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardii*). This document represents the Service's biological opinion on the effects of the project on the threatened vernal pool fairy shrimp and endangered vernal pool tadpole shrimp, in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act).

The findings and requirements in this consultation are based on: (1) the December 2003 *Dry-Season Sampling for Federally-listed Large Branchiopods at the Roseville Energy Park Project, Sacramento County, California*; (2) a April 13, 2004, site visit attended by Rick Kuyper of the Service and Stuart Itoga of the California Energy Commission (CEC); (3) the March 2005 *Biological Assessment for the Roseville Energy Park, Placer County, California*, prepared by CH2MHill; (4) the March 2005 *Jurisdictional Wetlands and Waters of the U.S. Reason Farms North Parcel, Placer County, California*; (5) a March 15, 2005, site visit attended by Rick Kuyper of the Service and Debra Crowe of CH2MHill; (6) your March 25, 2005, letter initiating formal consultation; (7) the May 5, 2005, electronic mail correspondence from Debra Crowe of CH2MHill to Rick Kuyper of the Service regarding the proposed conservation measures for the proposed project; and (8) information available to the Service.

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Consultation History

March 9, 2004. Adam Zerrenner of the Service, met with Stuart Itoga of the CEC, and Will Ness of the U.S. Army Corps of Engineers (Corps) to discuss the proposed project description and conservation measures.

April 13, 2004. A site visit was attended by Rick Kuyper of the Service and Stuart Itoga of the CEC.

April 29, 2004. A Biological Issue Resolution Workshop attended by Rick Kuyper of the Service, Stuart Itoga of the CEC, Jeff Finn of the California Department of Fish and Game (CDFG), Mark Morse of the City of Roseville, and Doug Davy of CH2MHill.

March 4, 2005. CH2MHill provided the March 2005 *Biological Assessment for the Roseville Energy Park, Placer County, California* to the Service.

March 15, 2005. A site visit attended by Rick Kuyper of the Service and Debra Crowe of CH2MHill. The March 2005 *Jurisdictional Wetlands and Waters of the U.S. Reason Farms North Parcel, Placer County, California* was provided to Rick Kuyper during this site visit.

March 25, 2005. U.S. Army Corps of Engineers (Corps) requested to initiate section 7 consultation with the Service for the proposed project.

May 2, 2005. Rick Kuyper of the Service sent an electronic mail correspondence to Debra Crowe of CH2MHill and Mark Morse of the City of Roseville with the proposed conservation measures as they appear in this biological opinion.

May 5, 2005. Debra Crowe of CH2MHill sent an electronic mail correspondence to Rick Kuyper of the Service approving the conservation measures as written in the May 2, 2005, electronic mail correspondence to herself and Mark Morse of the City of Roseville.

BIOLOGICAL OPINION

Description of the Proposed Action

The 70-acre proposed project site is located on Phillips Road, in the City of Roseville, and is adjacent to the Pleasant Grove Waste Water Treatment Plant. The proposed project involves the construction of the Roseville Energy Power (REP) Plant, a natural gas-fired, combined-cycle electrical generating facility. In addition, the proposed project would include construction of an electrical switchyard; a 1.5 mile natural gas pipeline; a 30-inch diameter, 720-foot long storm water pipeline; a 800-foot long sanitary waste line; a 40-foot long recycled water supply pipeline; storage tanks; a gas compressor station; a storm water detention pond; a 100-foot long 60 kilovolt (kV) transmission line; employee parking; and associated infrastructure. Full-scale operation is expected to commence by the spring of 2007.

The proposed project would directly affect 0.552 acres of habitat for the federally-listed vernal pool crustacean species through filling and grading. In addition, 2.504 acres of habitat would be indirectly affected by altering hydrology of the site, increased sedimentation and run-off of deleterious substances from construction activities, increases in non-native species, and other construction-related activities. The REP Plant site is also located within Critical Habitat Unit 12 for the vernal pool fairy shrimp.

Proposed Conservation Measures:

Roseville Energy has proposed the following compensation and minimization measures to minimize adverse effects to the federally-listed vernal pool fairy shrimp and the vernal pool tadpole shrimp in the March 2005 *Biological Assessment for the Roseville Energy Park, Placer County, California*:

1. The project applicant proposes to compensate for the loss of vernal pool grassland habitat both directly and indirectly affected by project construction by preserving in-kind habitat at the Reason Farms Environmental Preserve Area. The approximately 227-acre parcel is adjacent to Pleasant Grove Creek and located approximately three miles from the proposed project site, and is also located within Critical Habitat Unit 12 for the vernal pool fairy shrimp. The parcel contains a 116-acre portion of vernal pool grassland habitat, which has historically been used for cattle grazing. This 116-acre site contains approximately 4.20 acres of vernal pools and seasonal wetlands and 3.2 acres of vernal pool swales. Creation of vernal pools at a 1.3:1 ratio will occur within this 116-acre site as well. The applicant will provide habitat compensation of 18.9 acres of vernal pool grassland habitat within the 116-acre site that includes preservation of 6.1 acres of wetted habitat and 11.5 acres of adjacent upland habitat, and creation of 1.3 acres of vernal pools. The balance of the 116-acre site, as well as the remaining northern 112 acres of terraced fields formerly used for rice production, will be preserved as part of a separate project to compensate for losses to Swainson's hawk (*Buteo swainsoni*) and white-tailed kite (*Elanus leucurus*) foraging habitat.
2. Prior to ground disturbance activities at the REP Plant site, a conservation easement will be placed on the REP portion of the Reason Farms Environmental Preserve to provide for preservation, in perpetuity, of the REP vernal pool fairy shrimp and vernal pool tadpole shrimp habitat located within the 116-acre vernal pool grassland area. In addition, the conservation easement will be held by a third-party approved by the Service. As part of a separate project, the balance of the remaining 227-acre Reason Farms Environmental Preserve will also have a conservation easement to preserve, in perpetuity, Swainson's hawk and white-tailed kite foraging habitat.
3. Prior to any ground-disturbing activities at the REP Plant site, the project applicant will prepare a Service-approved Operations and Management Plan, and will include but not be limited to the following components: (1) discussion of the management and maintenance in perpetuity of the upland and aquatic vernal pool habitat within the preserve area; (2) discussion of grazing strategies, non-native species control, sedimentation, erosion,

and controlled burning; (3) provisions for creating a position for a preserve manager that would undertake the duties of implementing the management plan; (4) provisions for a monitoring program to be set up and implemented by the preserve manager, with an annual monitoring report that addresses the ecological functions of the preserve and whether the Operations and Management Plan is successful.

The Operations and Management Plan will include a list of prohibited activities that are inconsistent with the maintenance of the suitability of the vernal pool crustacean habitat, including, but not limited to: (1) a restriction that no vehicles (including but not limited to passenger vehicles, motorcycles, bicycles, and off-road recreational vehicles) will be allowed or operated on the preserve, (2) alteration of existing topography or any other alteration or uses for any purposes, including the exploration for, or development of mineral extraction; (3) placement of any structures in the preserve, (4) dumping and/or burning of rubbish, garbage, or any other wastes or fill materials; (5) building of any roads or trails; (6) killing, removal, alteration, or replacement of any existing native vegetation; (7) placement of storm water drains or other diversion or alteration of water that would disturb the existing hydrologic characteristics of the preserve and associated watersheds; (8) fire protection activities not required to protect existing structures; and (9) use of pesticides, rodenticides, and herbicides within the preserve in a manner that could adversely affect federally-listed species.

4. The project applicant will adhere to the proposed project's Storm Water Pollution Prevention Plan, which will utilize silt fencing, hay bales and booms, and other sedimentation and erosion control materials to restrict sedimentation and erosion from entering vernal pools outside of the proposed REP Plant footprint.
5. The project applicant proposes to utilize an on-site biological monitor during project boundary set-up, construction, and restoration activities.
6. Seasonal wetlands and vernal pools will be staked and flagged outside of the REP Plant site boundary to identify these resources near the access roads. Construction vehicles and equipment will avoid these areas.

The conservation measures as proposed above are considered part of the proposed actions evaluated by the Service in this biological opinion. Any change in these plans or their implementation that might adversely affect listed species, either directly or indirectly, requires reinitiation of consultation with the Service, as set forth in the final paragraphs of this letter.

Status of the Species

Vernal pool fairy shrimp

A final rule was published on September 19, 1994 (Service 1994), to list the vernal pool fairy shrimp as threatened. The final rule to designate critical habitat for 15 vernal pool species, including the vernal pool fairy shrimp was published on August 6, 2003 (Service 2003). Further

information on the life history and ecology of the vernal pool fairy shrimp and vernal pool tadpole shrimp may be found in the final listing rule, the final rule to designate critical habitat, Eng *et al.* (1990), Helm (1998), and Simovich *et al.* (1992).

Vernal pool fairy shrimp inhabit alkaline pools, ephemeral drainages, rock outcrop pools, vernal pools, and vernal swales (Helm 1998). Occupied habitats range in size from rock outcrop pools as small as one square meter to large vernal pools up to 12 acres; the potential ponding depth of occupied habitat ranges from 1.2 inches to 48 inches. The vernal pool fairy shrimp has been collected from early December to early May.

All known occurrences of vernal pool fairy shrimp occur in California or southern Oregon. The geographic range of this species encompasses most of the Central Valley from Shasta County to Tulare County and the central coast range from northern Solano County to Santa Barbara County, California; additional disjunct occurrences have been identified in western Riverside County, California, and in Jackson County, Oregon near the city of Medford (CDFG 2005; Helm 1998; Eriksen and Belk 1999; Volmar 2002; Service 1994, 2003).

Vernal pool fairy shrimp have delicate elongate bodies; large, stalked, compound eyes; no hard shell (i.e., no carapace); and 11 pairs of swimming legs. Typically less than 1 inch long, they swim or glide gracefully upside-down by means of complex, wavelike beating movements while feeding on algae, bacteria, protozoa, rotifers, and detritus. Female vernal pool fairy shrimp carry eggs in a pear-shaped, ventral brood sac until the eggs are either dropped or sink to the pool bottom with the female when she dies. Eggs which remain after pools dry are known as cysts and are able to withstand heat, cold, and prolonged desiccation. When pools refill in the same or subsequent seasons, some, but not all, of the cysts may hatch, resulting in a cyst bank in the soil that may include cysts from several breeding seasons (Donald 1983). Vernal pool fairy shrimp develop rapidly and may become sexually mature within two weeks after hatching (Gallagher 1996; Helm 1998). Such quick maturation permits fairy shrimp populations to persist in short-lived, shallow bodies of water (Simovich *et al.* 1992).

The primary historic dispersal method for the vernal pool fairy shrimp was likely large scale flooding resulting from winter and spring rains which allowed colonization of different individual vernal pools and other vernal pool complexes. This dispersal is prohibited by the construction of dams, levees, and other flood control measures, and widespread urbanization within significant portions of the range of this species. Waterfowl and shorebirds likely are now the primary dispersal agents for vernal pool tadpole shrimp and vernal pool fairy shrimp (Simovich 1992). The eggs of these crustaceans are either ingested (Krapu 1974; Swanson *et al.* 1974; Driver 1981; Ahl 1991) and/or adhere to the legs and feathers where they are transported to new habitats.

There are 29 occurrences of vernal pool fairy shrimp within the Roseville USGS quadrangle, as reported in the California Natural Diversity Database (CNDDB) (CDFG 2005). Branchinecta cysts were identified in one vernal pool within the proposed project area during dry season surveys for federally-listed crustacean species in 2003-2004. In addition, the wet season surveys detected vernal pool fairy shrimp in the easternmost portion of the parcel in a vernal pool outside

of the project construction footprint. In previous surveys, vernal pool fairy shrimp have been found in the West Park Property, which is adjacent and to the west of the proposed project area. The Service believes that the vernal pool fairy shrimp is reasonably certain to occur within the action area because of the biology and ecology of the animal, the presence of suitable habitat in and adjacent to the action area, as well as the recent observations at proximate areas of this listed species.

Vernal pool fairy shrimp Critical Habitat

The proposed project lies within the Western Placer County Unit (Unit 12) for the vernal pool fairy shrimp designated on August 6, 2003 (Service 2003). This critical habitat unit is approximately 32,134 acres in size and forms one of the remaining large vernal pool complex areas in the Southeastern Sacramento Valley vernal Pool Region (Keeler-Wolf et al. 1998). This unit contains occurrences of the vernal pool fairy shrimp and is considered essential for the conservation of the species. The majority of the lands within the unit are privately owned. Several conservation areas set-up to protect vernal pool habitat for the vernal pool fairy shrimp and vernal pool tadpole shrimp have been established within this unit.

Critical habitat Unit 12 for the vernal pool fairy shrimp contains primary constituent elements that support vernal pool crustacean feeding, growth, breeding, reproduction, and dispersal. These primary constituent elements of critical habitat provide for the physiological, behavioral, and ecological requirements of the vernal pool fairy shrimp. The first primary constituent element of vernal pool critical habitat is vernal pools, swales, and other ephemeral wetlands and depressions of appropriate sizes and depths that typically become inundated during winter rains and hold water for sufficient lengths of time necessary for incubation, reproduction, dispersal, feeding, and sheltering, but which are dry during the summer and do not necessarily fill with water every year. This primary constituent element provides the aquatic environment required for cyst incubation and hatching, growth and maturation, reproduction, feeding, sheltering, and dispersal, and the appropriate periods of dessication for cyst dormancy and to eliminate predators such as bullfrogs, fish, and other aquatic predators that depend on year round inundation of wetland habitats to survive.

The second primary constituent element of the critical habitat for the vernal pool fairy shrimp is to maintain the aquatic phase of the vernal pool habitat. The entire vernal pool complex, including the pools swales, and associated uplands, is essential to support the aquatic functions of the vernal pool habitat. Although the uplands are not actually occupied by vernal pool crustaceans, they nevertheless are essential to the conservation of vernal pool habitat and crustaceans because they are needed to maintain the aquatic phase of vernal pools and swales. Associated uplands are also essential to provide nutrients that form the basis of the vernal pool food chain, including a primary food source for the vernal pool crustaceans. The third primary constituent element is the geographic, topographic, and edaphic features that support aggregations or systems of hydrologically interconnected pools, swales, and other ephemeral wetlands and depressions within a matrix of surrounding uplands that together form hydrologically and ecologically functional units called vernal pool complexes. These features contribute to the filling and drying of the vernal pool, and maintain suitable periods of pool

inundation, water quality, and soil moisture for vernal pool crustacean hatching, growth and reproduction, and dispersal, but not necessarily every year. All of the above described primary constituent elements do not have to occur simultaneously within a unit for the unit to constitute critical habitat for one of these species.

Vernal Pool Tadpole Shrimp

A final rule was published on September 19, 1994 (Service 1994), to list the vernal pool tadpole shrimp as endangered under the Act. The final rule to designate critical habitat for 15 vernal pool species, including the vernal pool tadpole shrimp, was published on August 6, 2003 (Service 2003). Further information on the life history and ecology of the vernal pool tadpole shrimp may be found in the final listing rule, the final rule to designate critical habitat, Eng *et al.* (1990), Helm (1998), and Simovich *et al.* (1992).

Vernal pool tadpole shrimp inhabit alkaline pools, clay flats, vernal lakes, vernal pools, vernal swales, and other seasonal wetlands (Helm 1998). Occupied habitats range in size from vernal pools as small as two square meters to large vernal lakes up to 89 acres; the potential ponding depth of occupied habitat ranges from 1.5 inches to 59 inches.

The vernal pool tadpole shrimp is known from 19 populations in the Central Valley, ranging from east of Redding in Shasta County south to Fresno County, and from a single vernal pool complex located on the San Francisco Bay National Wildlife Refuge in Alameda County. The species inhabits vernal pools containing clear to highly turbid water, ranging in size from 54 square feet in the former Mather Air Force Base area of Sacramento County, to the 89-acre Olcott Lake at Jepson Prairie in Solano County. Vernal pools at Jepson Prairie and Vina Plains (Tehama County) have a neutral pH, and very low conductivity, total dissolved solids, and alkalinity (Barclay and Knight 1984; Eng *et al.* 1990). These pools are located most commonly in grass-bottomed swales of grasslands in old alluvial soils underlain by hardpan or in mud-bottomed claypan pools containing highly turbid water.

Vernal pool tadpole shrimp have large, shield-like carapaces approximately 1 inch long that covers most of their body; dorsal, compound eyes; and a pair of long cercopods, one on each side of a flat caudal plate, at the end of their last abdominal segment. Vernal pool tadpole shrimp are primarily bottom-dwelling animals that move with legs down while feeding on detritus and living organisms, including fairy shrimp and other invertebrates (Pennak 1989). Females deposit cysts (partially developed embryos encased in an egg-like structure) which settle on the pool bottom. Although some cysts may hatch quickly, others remain dormant to hatch during later rainy seasons (Ahl 1991). When winter rains refill inhabited wetlands, tadpole shrimp reestablish from dormant cysts and may become sexually mature within three to four weeks after hatching (Ahl 1991; Helm 1998). Reproductively mature adults may be present in pools until the habitats dry up in the spring (Ahl 1991; Gallagher 1996; Simovich *et al.* 1992).

The primary historic dispersal method for the vernal pool tadpole shrimp was likely large scale flooding resulting from winter and spring rains which allowed colonization of different individual vernal pools and other vernal pool complexes. This dispersal is prohibited by the

construction of dams, levees, and other flood control measures, and widespread urbanization within significant portions of the range of this species. Waterfowl and shorebirds likely are now the primary dispersal agents for vernal pool tadpole shrimp and vernal pool fairy shrimp (Simovich 1992). The eggs of these crustaceans are either ingested (Krapu 1974; Swanson *et al.* 1974; Driver 1981; Ahl 1991) and/or adhere to the legs and feathers where they are transported to new habitats.

There is one known occurrence of the vernal pool tadpole shrimp from the Roseville USGS quadrangle (CNDDDB 2005). Vernal pool tadpole shrimp were not detected during wet and dry season surveys in 2003 and 2004. The surveys were not performed at protocol-level, but did detect the presence of vernal pool fairy shrimp. The Service believes that it is possible for the vernal pool tadpole shrimp to occur within the action area because of the biology and ecology of the animal, the presence of suitable habitat in and adjacent to the action area, as well as the recent observations of this listed species. However, based on the hydrology of the wetland features present within the proposed project area, vernal pool fairy shrimp are more likely to be present.

Environmental Baseline

The vernal pool tadpole shrimp and vernal pool fairy shrimp are imperiled by a variety of human-caused activities, primarily urban development, water supply/flood control projects, and land conversion for agricultural use. Habitat loss occurs from direct destruction and modification of pools due to filling, grading, discing, leveling, and other activities, as well as modification of surrounding uplands which alters vernal pool watersheds. Other activities which adversely affect these species include off-road vehicle use, certain mosquito abatement measures, and pesticide/herbicide use.

In addition to direct habitat loss, the vernal pool habitat for the vernal pool tadpole shrimp and vernal pool fairy shrimp has been and continues to be highly fragmented throughout their ranges due to conversion of natural habitat for urban and agricultural uses. This fragmentation results in small isolated vernal pool tadpole shrimp and vernal pool fairy shrimp populations. Such populations may be highly susceptible to extirpation due to chance events, inbreeding depression, or additional environmental disturbance (Gilpin and Soule 1986; Goodman 1987a; 1987b). If an extirpation event occurs in a population that has been fragmented, the opportunities for recolonization would be greatly reduced due to physical (geographical) isolation from other (source) populations.

Holland (1978) estimated that between 67 and 88 percent of the area within the Central Valley of California which once supported vernal pools had been destroyed by 1973. In the ensuing years, threats to this habitat type have continued and resulted in a substantial amount of vernal pool habitat being converted for human uses in spite of Federal regulations implemented to protect wetlands. Current rapid urbanization and agricultural conversion throughout the ranges of these two species continue to pose the most severe threats to the continued existence of the vernal pool tadpole shrimp and vernal pool fairy shrimp. The Corps' Sacramento District has several thousand vernal pools under its jurisdiction (Coe 1988), which includes most of the known populations of these listed species. It is estimated that 60 to 70 percent of these pools will be

destroyed by human activities by the year 2008 (Coe 1988). Of the several thousand vernal pools that are located around Sacramento, Coe (1988) suggested that perhaps 1,800 vernal pools will be impacted due to future development in western Placer County alone.

Western Placer County is located in the Southeastern Sacramento Vernal Pool Region, one of 17 vernal pool regions in the State of California defined by the California Department of Fish and Game in the California Vernal Pool Assessment Preliminary Report (Keeler-Wolf *et al.* 1998). The regions were identified according to biological, geomorphological, and soils information.

The Southeastern Sacramento Valley Vernal Pool Region contains almost 15% of the remaining vernal pool grasslands in the State of California, and supports 35 percent of the known occurrences of the vernal pool fairy shrimp documented in the California Natural Diversity Database. It is the most threatened by development of the 17 regions. According to Holland (1998), Placer County has lost 1,525 acres of vernal pool habitat from 1994 to 1997, at a rate of approximately 508 acres per year, or just over 1 percent per year.

Development projects within western Placer County and critical habitat Unit 12 for the vernal pool fairy shrimp include the Highland Reserve, Highland Reserve North, Sunset West, Stanford Ranch, Twelve Bridges, Sun City Lincoln Hills, Lincoln 3-D South, and Stoneridge Specific Plan Area, (Olympus Oaks, Cavitt Ranch projects). These development projects have reduced the number of vernal pool complexes within the area. These developments and others within the region have resulted in both direct and indirect effects to vernal pools, and have contributed to the loss of vernal pool fairy shrimp and vernal pool tadpole shrimp occurrences. Although the reduction of federally-listed vernal pool crustacean populations has not been quantified, the acreage of lost habitat continues to grow. General and Specific Plans for the western Placer County area such as the proposed Placer Vineyards, Three-D South, Whispering Springs, Placer Parkway, Lincoln Crossing, Aitkens Ranch, Sundance, Lincoln 270 Annex, and the State Route 65 bypass, as well as numerous other proposed housing, industrial, infrastructure, energy facilities, universities, hospitals, and other development projects in and around the city of Lincoln, Rocklin, Roseville and in Placer County have identified significant, unavoidable impacts to biological communities, including elimination of vernal pools, intermittent drainages and other seasonal wetlands. Despite these impacts, city and county governments continue to approve development projects within the area.

EFFECTS OF THE PROPOSED ACTION

Direct Effects

The construction of the proposed project will result in the direct loss of 2.849 acres of federally-listed crustacean habitat, and the death of an unknown number of vernal pool fairy shrimp and vernal pool tadpole shrimp.

The 2.849 acres of federally-listed crustacean habitat is located within critical habitat unit 12 for the vernal pool fairy shrimp. This biological opinion does not rely on the regulatory definition of

“destruction or adverse modification” of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statute and the August 6, 2004, Ninth Circuit Court of Appeals decision in *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service* (No. 03-35279) to complete the following analysis with respect to critical habitat.

Indirect Effects

Vernal pool habitat indirectly affected includes all habitat supported by future destroyed upland areas and swales, and all habitat otherwise damaged by loss of watershed, human intrusion, introduced species, and pollution that will be caused by the project. A description of potential indirect effects follows.

Erosion - The ground disturbing activities in the watershed of vernal pools associated with the proposed project action area are expected to result in siltation when pools fill during the wet season following construction. Siltation in pools supporting listed crustaceans may result in decreased cyst viability, decreased hatching success, and decreased survivorship among early life history stages, thereby reducing the number of mature adults in future wet seasons. The proposed project construction activities could result in increased sedimentation transport into vernal pool crustacean habitats during periods of heavy rains.

Changes in hydrology - The biota of vernal pools and swales can change when the hydrologic regime is altered (Bauder 1986, 1987). Survival of aquatic organisms like the vernal pool fairy shrimp and vernal pool tadpole shrimp are directly linked to the water regime of their habitat (Zelder 1987). Therefore, construction near vernal pool areas will, at times, result in the decline of local sub-populations of vernal pool organisms, including fairy shrimp and tadpole shrimp.

Introduction of non-natives - There is an increased risk of introducing weedy, non-native plants into the vernal pools both during and after project construction due to the soil disturbance from clearing and grubbing operations, and general vegetation disturbance associated with the use of heavy equipment.

Chemical contamination - The runoff from chemical contamination can kill listed species by poisoning. Oils and other hazardous materials associated with construction equipment could be conveyed into the vernal pool crustacean habitats by overland runoff during the rainy season, thereby adversely affected water quality. Many of these chemical compounds are thought to have adverse affects on all of the listed vernal pool crustaceans and/or their cysts. Individuals may be killed directly or suffer reduced fitness through physiological stress or a reduction in their food base due to the presence of these chemicals.

In addition to the adverse effects detailed above, the proposed project will contribute to a local and range-wide trend of habitat loss and degradation, the principal reasons that the vernal pool fairy shrimp and vernal pool tadpole shrimp have declined. The proposed project will contribute to the fragmentation and reduction of the acreage of the remaining listed vernal pool crustacean

habitat located in western Placer County and throughout the range of these two listed vernal pool crustaceans.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Because the vernal pool tadpole shrimp and vernal pool fairy shrimp are endemic to vernal pools in the Central Valley, coast ranges, and a limited number of sites in the transverse range and Santa Rosa Plateau of California, the Service anticipates that a wide range of activities will affect these species. Such activities include, but are not limited to urban, water, flood control, highway, and utility projects, chemical contaminants, as well as conversion of vernal pools to agricultural use. Many of these activities will be reviewed under section 7 of the Act as a result of the Federal nexus provided by section 404 of the Clean Water Act.

Conclusion

After reviewing the current status of the vernal pool tadpole shrimp and vernal pool fairy shrimp, the environmental baseline for the area covered by this biological opinion, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that the Roseville Energy Park project, as proposed, is not likely to jeopardize the continued existence of the vernal pool tadpole shrimp and vernal pool fairy shrimp. The proposed project is located within designated critical habitat for the vernal pool fairy shrimp, and as stated above, the proposed project involves direct effects to 0.552 acres and indirect effects to 2.504 acres of vernal pool fairy shrimp critical habitat. Due to the off-site preservation and creation of vernal pool grassland and wetted habitat within Critical Habitat Unit 12 proposed for the project, the Service has determined that this project would not result in the adverse modification or destruction of critical habitat for this species.

INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not

intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by the agency so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The Service anticipates incidental take of the vernal pool fairy shrimp and vernal pool tadpole shrimp will be difficult to detect or quantify. The cryptic nature of these species and their relatively small body size make the finding of a dead specimen unlikely. The species occur in habitats that make them difficult to detect. Due to the difficulty in quantifying the number of individuals that will be taken as a result of the proposed action, the Service is quantifying take incidental to the project as the number of acres of vernal pools/ponded depressions (vernal pool crustacean habitat) that will become unsuitable for vernal pool crustaceans due to direct or indirect effects as a result of the action. Therefore, the Service estimates that all vernal pool fairy shrimp and vernal pool tadpole shrimp inhabiting 3.056 acres of vernal pool habitat will become harassed, harmed, injured, or killed, as a result of the proposed action.

The incidental take associated with the proposed action on vernal pool fairy shrimp and vernal pool tadpole shrimp is hereby exempted from prohibitions of take under section 9 of the Act.

Effect of the Take

The Service has determined that this level of anticipated take is not likely to result in jeopardy to the listed species in this biological opinion. This action will not result in destruction or adverse modification of proposed or designated critical habitat.

Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the adverse effects of the project on vernal pool fairy shrimp and vernal pool tadpole shrimp:

1. The effects to federally-listed vernal pool crustaceans resulting from habitat modification and habitat loss shall be minimized.
2. The effects to federally-listed vernal pool tadpole shrimp and vernal pool fairy shrimp from project construction shall be minimized.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the project applicant must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

The following terms and conditions implement reasonable and prudent measures one (1) and two (2):

- a. The project applicant shall minimize take of the two federally-listed crustaceans resulting from project-related activities by implementation of the project, including the conservation measures, as described in the March 2005 *Biological Assessment for the Roseville Energy Park, Placer County, California*, and the conservation measures appearing in the *Project Description* of this biological opinion.
- b. A Service-approved Worker Environmental Awareness Training Program for construction personnel shall be conducted prior to ground breaking at the proposed project site. The program shall provide workers with information on their responsibilities with regard to listed species and an overview of the life-history of the species and description of the preserve areas. Written documentation of the training shall be transmitted to the Sacramento Fish and Wildlife Office within 30 days of completion of training.
- c. Adequate high visibility fencing shall be placed around the avoided vernal pool areas within the REP Plant site to prevent encroachment of construction equipment and personnel into these avoided wetland areas during project work activities. Such fencing shall be inspected and maintained daily until completion of the project.
- d. Water runoff from dust control, and hazardous materials during construction activities shall be retained in the construction site and prevented from flowing into the on-site wetland preserves or permanent waterways. To control erosion during and after project implementation, the applicant shall implement best management practices, as identified by the appropriate Regional Water Quality Control Board. Erosion control measures and best management practices (BMP's) that prevent soil or sediment from entering the wetlands and Pleasant Grove Creek shall be placed, monitored for effectiveness, and maintained throughout the construction operations.
- e. All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 250 feet from any riparian habitat or water body or preserve area. The applicant shall ensure contamination of habitat does not occur during such operations. All workers shall be informed of the importance of preventing spills and appropriate measures to take should a spill occur.

- f. Stockpiling of construction materials, portable equipment, vehicles and supplies, including chemicals, shall be restricted to the designated construction staging areas and exclusive of the riparian and wetlands avoidance areas. Refueling of construction equipment and vehicles within the floodplain shall occur only within designated areas not affecting the riparian and wetlands avoidance areas. Any spills of hazardous materials shall be cleaned up immediately. Such spills shall be reported in the post-construction compliance reports.
- g. Opportunity shall be given to third party individuals conducting vernal pool restoration efforts to collect innoculum from the vernal pools prior to fill and destruction. At least 90 days notice prior to the beginning of construction shall be given to the Service and appropriate wetland restoration contractors. Construction activities shall not begin prior to opportunities to collect innoculum from vernal pools.
- h. If requested, the on-site biologist or the City of Roseville shall accompany Service or CDFG personnel on an on-site inspection to review project effects to federally-listed vernal pool crustaceans and their habitat before, during, or upon completion of construction activities.
- j. The applicant shall comply with the reporting requirements outlined below.

Reporting Requirements

The Sacramento Fish and Wildlife Office is to be notified within one working day of the finding of any dead federally-listed species or any unanticipated harm to the species addressed in this biological opinion. The Service contact person for this is the Chief of Endangered Species Division (Central Valley) at (916) 414-6600 and the Resident Agent-in-charge of the Service's Law Enforcement Division at (916) 414-6660.

The Corps must require the applicant to report to the Service immediately any information about take or suspected take of federally-listed species not authorized in this opinion. The Corps must notify the Service within 24 hours of receiving such information. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal. The Service contact is the Resident Agent-in-charge of the Service's Law Enforcement Division at (916) 414-6660.

Any contractor or employee who during routine operations and maintenance activities inadvertently kills or injures a listed wildlife species must immediately report the incident to their representative. This representative must contact the California Department of Fish and Game immediately in the case of a dead or injured listed species. The California Department of Fish and Game contact for immediate assistance is State Dispatch at (916) 445-0045.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases. The Service recommends the following conservation measures:

1. The Corps should work with the Service to establish functioning vernal pool preserve and creation banking systems in each county to further the conservation of listed vernal pool crustacean species. Such banking systems could incorporate other Corps-required mitigation (i.e., seasonal wetlands, riparian habitats, etc.).
2. The Corps should assist the Service in their implementation of the *Draft Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon*.
3. The construction of the 60 kV transmission line should be constructed in a manner to prevent electrocution to raptor species. Methods may include proper spacing between energized surfaces to prevent flesh-to-flesh contact of all raptors that may potentially be present onsite, insulating energized surfaces, the use of raptor perches, or other methods recommended in the Avian Power Line Interaction Committee's *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996* (APLIC 1996).
4. Plastic mono-filament netting (erosion control matting) or similar material should not be used at the proposed project site because reptiles, mammals, and birds may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the proposed Roseville Energy Park Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or, (4) a new species is listed or critical habitat designated that may be affected by the action. In

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instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Please contact Rick Kuyper or the Acting Sacramento Valley Branch Chief of this office at (916) 414-6645, if you have any questions regarding this biological opinion on the proposed Roseville Energy Project.

Sincerely,

A handwritten signature in black ink that reads "Peter A. Cross". The signature is written in a cursive style with a large, stylized "P" and "C".

for Kenneth D. Sanchez
Acting Field Supervisor

cc:

Jeff Finn, California Department of Fish and Game, Rancho Cordova, California

Melinda Dorin, California Energy Commission, Sacramento, California

Mark Morse, City of Roseville, Roseville, California

Debra Crowe, CH2M Hill, Sacramento, California

LITERATURE CITED

- Ahl, J. S. B. 1991. Factors affecting contributions of the tadpole shrimp, *Lepidurus packardii*, to its overwintering egg reserves. *Hydrobiologia* 212:137-143.
- Avian Power Line Interaction Committee (APLIC). 1996. Suggested practices for raptor protection on power lines: the state of the art in 1996. Edison Electric Institute/Raptor Research Foundation. Washington D.C.
- Barclay, W. R. and A. W. Knight. 1984. Physio-chemical processes affecting production in a turbid vernal pool. Pages 126-142 in: S. Jain and P. Moyle (eds.). *Vernal pools and intermittent streams*. Inst. Ecol. Pub. 28. University of California, Davis, California.
- Bauder, E. T. 1986. San Diego vernal pools: recent and projected losses, their condition, and threats to their existence. California Department of Fish and Game, Sacramento, California.
- . 1987. Threats to San Diego vernal pools and a case study in altered pool hydrology. Pp. 209-214 In T. S. Elias (ed.). *Conservation and Management of Rare and Endangered Plants*. California Native Plant Society, Sacramento, California.
- California Department of Fish and Game (CDFG). California Natural Diversity Data Base. 2005. California Natural Heritage Division. California Fish and Game, Sacramento, California.
- Coe, T. 1988. The application of Section 404 of the Clean Water Act to Vernal Pools. Pages 356-358 in: J.R. Kusler, S. Daly, and G. Brooks (eds.). *Urban Wetlands*. Proceedings of the National Wetland Symposium. Oakland, California.
- Donald, D. B. 1983. Erratic occurrence of anostracans in a temporary pond: colonization and extinction or adaptation to variations in annual weather? *Canadian Journal of Zoology* 61:1492-1498.
- Driver, E. A. 1981. Caloric value of pond invertebrates eaten by ducks. *Freshwater Biology* 11:579-581.
- Eng, L. L., D. Belk, and C. H. Erickson. 1990. California Anostraca: Distribution, habitat, and status. *Journal of Crustacean Biology* 10(2):247-277.
- Eriksen, C. H. and D. Belk. 1999. *Fairy shrimps of California's puddles, pools, and playas*. Mad River Press, Eureka, California, 196 pp.
- Fugate, M. L. 1992. Speciation in the fairy shrimp genus *Branchinecta* (Crustacea: Anostraca) from North America. Ph.D. dissertation. Department of Biology, University of California, Riverside, California.

- Gallagher, S.P. 1996. Seasonal occurrence and habitat characteristics of some vernal pool Branchiopoda in northern California, U.S.A. *Journal of Crustacean Biology* 16(2):323-329.
- Gilpin, M. E. and M. E. Soule. 1988. Minimum viable populations: processes of species extinction. Pages 18-34 *in*: M. E. Soule (ed.). *Conservation biology: the science of scarcity and diversity*. Sinauer Associates, Inc. Sunderland, Massachusetts.
- Goodman, D. 1987a. The demography of chance extinction. Pages 11-19 *in*: M. E. Soule (ed.). *Conservation biology: the science of scarcity and diversity*. Sinauer Associates, Inc. Sunderland, Massachusetts.
- _____. 1987b. How do any species persist? Lessons for conservation biology. *Conservation Biology* 1:59-62.
- Helm, B.P. 1998. Biogeography of eight large branchiopods endemic to California. Pages 124-139 *in* C.W. Witham, E.T. Bauder, D. Belk, W.R. Ferren, Jr., and R. Ornduff, editors. *Ecology, conservation, and management of vernal pool ecosystems*. California Native Plant Society, Sacramento, California.
- Holland, R. F. 1978. The geographic and edaphic distribution of vernal pools in the Great Central Valley, California. *California Native Plant Society, Special Publication* 4:1-12.
- _____. 1998. No Net Loss? Changes in Great Valley vernal pool distribution from 1989 to 1997. California Department of Fish and Game, Natural Heritage Division, Sacramento, California.
- Keeler-Wolf, T., D.R. Elam, K. Lewis, and S.A. Flint. 1998. California vernal pool assessment preliminary report. State of California, The Resources Agency, Department of Fish and Game, Sacramento, California.
- Krapu, G. L. 1974. Foods of breeding pintails in North Dakota. *Journal of Wildlife Management* 38(3):408-417.
- Lanaway, C. S. 1974. Environmental factors affecting crustacean hatching in five temporary ponds. M.S. thesis. Department of Biological Science, California State University, Chico, California.
- Linder, F. 1952. The morphology and taxonomy of the branchiopod Nostraca, with special reference to the North American species. *Proceedings of the U.S. Natural Museum*. 102:1-57
- Longhurst, A. R. 1955. A review of the Nostraca. *Bulletin of the British Museum (Natural History), Zoology* 3:1-57.

- Pennak, R. W. 1989. Freshwater invertebrates of the United States. Wiley & Sons. New York, New York.
- Simovich, M. A., R. C. Brusca and J. L. King. 1992. Invertebrate survey, PGT-PG&E/Bechtel Pipeline Expansion Project. University of San Diego, San Diego California.
- Sugnet and Associates. 1993. Preliminary compilation of documented distribution, fairy shrimp and tadpole shrimp proposed for listing. Roseville, California.
- Swanson, G. A., M. I. Meyer and J. R. Serie. 1974. Feeding ecology of breeding blue-winged teals. *Journal of Wildlife Management*. 38:396-407.
- U.S. Fish and Wildlife Service (Service). 1992. Wetland losses within northern California from projects authorized under Nationwide Permit No. 26. Sacramento Field Office. Sacramento, California.
- _____. 1994. Endangered and threatened wildlife and plants; determination of endangered status for the Conservancy fairy shrimp, longhorn fairy shrimp, and the vernal pool tadpole shrimp; and threatened status for the vernal pool fairy shrimp. **Federal Register** 59: 48136-48153.
- _____. 2003. Endangered and threatened wildlife and plants; final designation of critical habitat for four vernal pool crustaceans and eleven vernal pool plants in California and southern Oregon. **Federal Register** 68: 46683-46867.
- Vollmar, J. E. (Ed.). 2002. Wildlife and Rare Plant Ecology of Eastern Merced County's Vernal Pool Grasslands. Vollmar Consulting. Berkeley, California. 444 pp. + Appendix A.
- Zelder, P. H.. 1987. The ecology of southern California vernal pools: a community profile. Biological Report 85: 7-11. U.S. Fish and Wildlife Service, Washington, D.C.